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construction is used, separate holes may not be necessary since the open construction of a lath, scrim, or mesh is ideal for mechanically locking with the cementitious layer 22 and is easily penetrated by fasteners such as nails and screws. With lath or scrim constructions, embedding within the cementitious layer 22 is an option, in which case, the rigid support member may contain corrugations, grooves perforations or ridges to assist in mechanically locking with the cementitious layer 22.

Aggregates 25, fibers 24, dispersants, and a rheology-modifying agents can be selectively added to modify the properties of the cementitious layer 22. The cementitious layer 22 most preferably includes a known fiber cement composition including wood fiber, silica sand and portland cement, with or without an acrylic modifier. A variety of additives can be included within the cementitious layer 22, such as organic binders, dispersants, one or more aggregate materials 25, fibers 24, air entraining agents, blowing agents, or reactive metals. The identity and quantity of any additive will depend on the desired properties or performance criteria of both the cementitious layer 22 as well as the sheathing or trim product made therefrom.

Organic binders are simply polymers that when added to water under certain conditions form long chains that intertwine and capture the components of the mixture. As water is removed from the mixture, these long chains solidify and bind the structural matrix. Because of the nature of these organic binders, however, they also function to modify the rheology of a composition. Whether the organic material is a binder, or primarily affects the rheology is a matter of degree and is dependent on the concentration. In smaller amounts the organic material primarily affects the rheology. As the amount of organic material is increased, its ability to bind the particles together increases, although it also continues to affect the rheology.

Organic binders can also be added to increase the cohesive strength, "Plastic-like" behavior, and the ability of the mixture to retain its shape when molded or extruded. They act as thickeners and increase the yield stress of the inorganically filled mixture, which is the amount of force necessary to deform the mixture. This creates high "green strength" in the molded or extruded product. Suitable organic binders include a variety of cellulose-, starch-, and protein-based materials (which are generally highly polar), all of which assist in bridging the individual particles together.

Dispersants, on the other hand, act to decrease the viscosity and the yield stress of the mixture by dispersing the individual aggregates 25, fibers 24, and binding particles. This allows for the use of less water while maintaining adequate levels of workability. Suitable dispersants include any material which can be absorbed onto the surface of the binder particles or aggregates and which act to disperse the particles, usually by creating a charged area on the particle surface or in the near colloid double layer. The binders and dispersants can be introduced in the dry mixing step 210, slurry forming step 212 and/or sprayed between layers 204 by a spray head 208 onto the accumulator roll 202, for example.

It may be preferable to include one or more aggregate materials within the cementitious layer 22 in order to add bulk and decrease the cost of the mixture. Aggregates often impart significant strength properties and improve workability. An example of one such aggregate is ordinary silica sand or clay, which are completely environmentally safe, extremely inexpensive, and essentially inexhaustible.

In other cases, lightweight aggregates can be added to yield a lighter, and often more insulating, final product. Examples

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of lightweight aggregates are perlite, vermiculite, hollow glass spheres, aerogel, xerogel, pumice, and other lightweight rocklike materials. These aggregates are likewise environmentally neutral and relatively inexpensive.

Fibers may be added to the cementitious layer 22 in order to increase the interlaminar bond strength, compressive, tensile, flexural, and cohesive strengths of the wet material as well as the hardened articles made therefrom. Fiber should preferably have high tear and burst strengths (i.e., high tensile strength), examples of which include waste paper pulp, abaca, southern pine, hardwood, flax, bagasse (sugar cane fiber), cotton, and hemp. Fibers with a high aspect ratio of about 10 or greater work best in imparting strength and toughness to the moldable material.

From the foregoing, it can be realized that this invention provides reinforced cementitious sheathing products which are lighter in weight and more resistant to cracking than currently available commercial fiber cement products. The preferred corner trim board of this invention can use less than half of the cementitious material of a conventional trim board, but since it is reinforced with a rigid support member, it will be easier to work with and provide potentially greater durability. The cementitious layers of this invention can be joined to the rigid support member with mechanical and/or adhesive bonds, and the individual layers of the cementitious products of this invention can be further reinforced with rheological modifying agents to increase ILB strength by allowing fibers to displace and flow better across the laminated boundaries of the cementitious materials, or by adding mortar or cement bonding agents for adhesively bonding these layers together, or both. Although various embodiments have been illustrated, this is for the purpose of describing, and not limiting the invention. Various modifications, which will become apparent to one skilled in the art, are within the scope of this invention described in the attached claims.

What is claimed is:

1. A method of manufacturing an exterior building product comprising:

- a) forming a slurry of substantially non-gypsum cementitious material with reinforcing fibers;
- b) forming the slurry into successive fibercement layers;
- c) incorporating a resinous bond promoter of substantially non-gypsum, acrylic emulsion in an interlaminar region formed between the successive fibercement layers, and spraying a rheological agent of nano-sized magnesium alumino silicate onto the fibercement layers;
- d) applying pressure and a wood grain impression in the slurry by a method step of molding the slurry with a mold having the wood grain impression and molding at a pressure of at least about 100 psi-500 psi, and dewatering and curing the slurry with the resinous bond promoter in the interlaminar region to bond the successive fibercement layers to one another with an increased interlaminar bond strength.

2. The method of claim 1 wherein said resinous bond promoter further comprises one or more of, starch, polyvinyl acetate, and derivatives thereof.

3. The method of claim 1, further comprising: spraying the bond promoter onto one of the successive fibercement layers, and layering thereon another of the successive fibercement layer such that the bond promoter promotes better adhesion between the successive fibercement layers.

4. The method of claim 1 wherein first and second successive fibercement layers define a region therebetween, and said resinous bond promoter is applied to at least about 50% of the region.